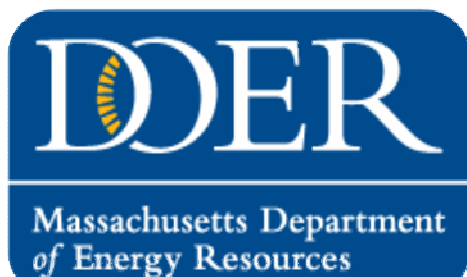


Creating A Greener Energy Future For the Commonwealth



Biodiesel

The low hanging fruit

Stephen Russell
Alternative Transportation Program
Coordinator/ Clean Cities Director
June 2, 2010

BIODIESEL B-20 - THE REASONS:

- Runs in Existing, unmodified engines
- Integrates with existing fuel infrastructure
- Increases lubricity
- Cuts exhaust emissions, eliminates black smoke and odor – Just ask my mechanics!
- Higher flashpoint than petroleum diesel
- Biodegradable – Feedstocks include seed oil, palm oil, animal fats, and recycled cooking oil.
- Renewable source of energy
- Low risk simple to phase in and out of use

Biodiesel – Keene NH

So in what engines do we use B-20 ?

International

Case New Holland

Cat John Deere

Cummins Detroit Diesel
& Kohler

from a 1969 Ingram roller
to a 2008 Ford F450



Biodiesel- Keene NH

- Used in Entire fleet as well as :
- The City of Keene's ladder and fire trucks
- It is busy keeping Keene safe.
- It uses B-20 and is very dependable! (except when being serviced as seen here)



Manage your fuel

- No matter what alt fuel you use the days are over of just calling your fuel supplier and forgetting about the fuel
- Monitor the shelf life - monitor H₂O
- Have the fuel tested at least once a year to see the condition of the tank.

Biodiesel – Getting started

- Make sure your tanks are clean and water free before transitioning to Biodiesel
- Fuel filters on vehicles and in delivery system may need to be changed more frequently during start up period
- Most of all make sure you have a good quality fuel.

No silver bullet

Take a look at your fleet and find the operations
that alternative fueled vehicles will work and

GO FOR IT!

And when prices of fuel gets to \$6.00 issue bikes!

Contact:

Stephen.Russell@

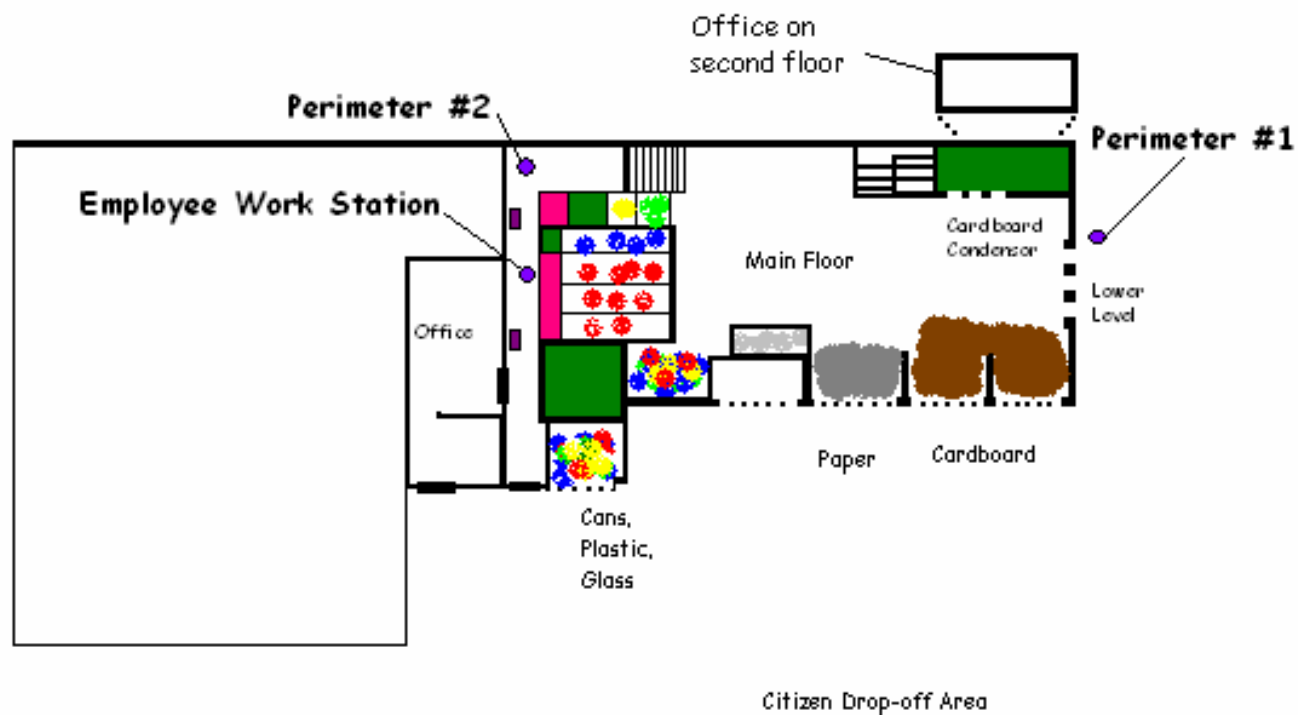
State.ma.us



Health benefits B-20

- Operators have stated that the headaches they would get from operating equipment with 100% diesel have gone away while operating equipment with B-20. So I asked the question WHY to Dr. Melinda Treadwell at Keene state college and she offered to assist me in finding out!
- Let's hear more.

City of Keene Recycling Center



MUNICIPAL FACILITY

Diesel Engines and Air Quality

Diesel engines - MAJOR environmental and public health concern

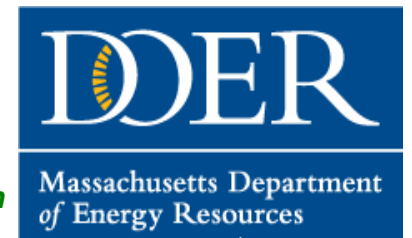
- Oxides of Nitrogen or NO_x;
- Fine particulate matter



Downtown LA, 4/29/2004

Source: MSNBCmedia.msn.com

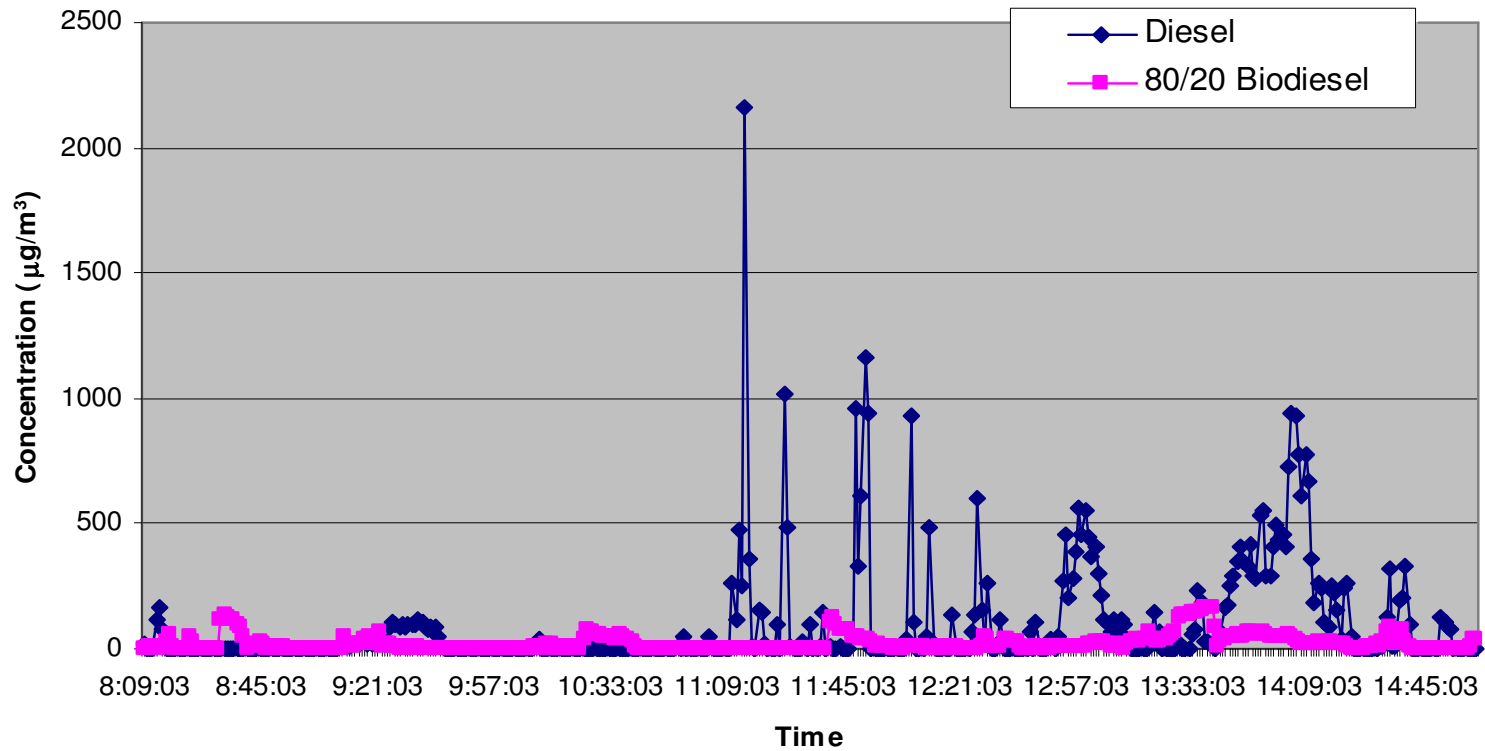
- A complex mixture of **volatile chemicals** (carcinogens or respiratory damaging agents)



Creating A Greener Energy Future For the Commonwealth

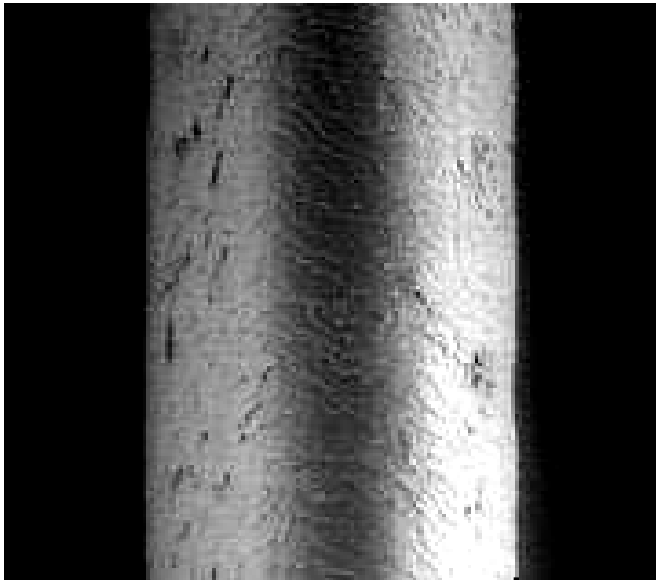
Health effects-Study at Keene RC

Perimeter #1, PM_{2.5} Concentrations, Keene Recycling Center



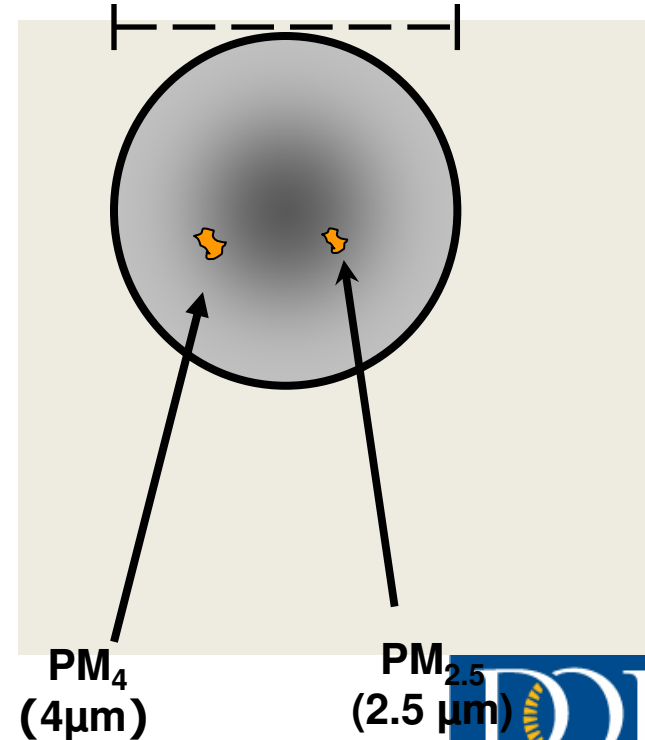
What are Fine Particles?

A complex mixture of extremely small solid particles and drops of liquid in the air



Human Hair (45 - 130 μm diameter)

Hair cross section ($\sim 70 \mu\text{m}$)



Biodiesel and cold weather

- Keene had many weeks of below zero temperatures and performance has not been compromised. The key to good cold weather performance is to make sure the petroleum portion of the fuel is a good winter blend as well as using a bio-diesel winter additive in extreme temperature cases.

Biodiesel and Warranties!

- Most major engine companies have stated formally that the use of blends up to B20 will not void their parts and workmanship warranties. Several statements from the engine companies are available on the NBB.org website.
- The most important recommendation that I can make for the use of biodiesel is that the b-100 before being blended must meet ASTM D-6751 standard. In addition it is recommended that the handler of the fuel be BQ-9000 certified.

Massachusetts & Biodiesel

» Beginning July of 2010 the State will have 2% biofuel in all of its transportation fuel. It will be a low carbon standard fuel with all bio at a 50 % GHG emissions .

If there is any doubt of the future of the EV industry

Gas electric hybrid custom made motorcycle



The reasons:

All biodiesel blends:

- Run in Existing, unmodified engines
- Integrates with existing fuel infrastructure
- Increases lubricity
- Cuts exhaust emissions, eliminates black smoke and odor – Just ask the mechanics!
- No loss of power
- Increase in fuel mileage reports of 1 to 2 additional miles per gallon running B- 20
- With proper fuel additive no problems with gelling reported.
- Warranties are not voided despite all the rumors
- Manufacturers warranty their parts and workmanship - not FUEL!

Health benefits:

Using B-20:

- Operators have stated that the headaches they would get from operating equipment with 100% diesel have gone away while operating equipment with B-20. In an air quality study done at the Keene transfer station the PM2.5 particulate matter was reduced by over 60% !

Biodiesel

- What is Biodiesel?
 - Biodiesel is a diesel fuel substitute.
 - Produced from Domestic Renewable Resources:
any fat or oil, like vegetable oil, waste greases, animal fat
or virgin Soy oil.
 - Meets health effect testing (CAA)
 - Lower emissions
 - High flash point (>300F), Safe
 - B 100 is biodegradable, Essentially non-toxic.
- It is blended with petroleum Diesel at various % levels
up to any percentage the user would like to use.

Biodiesel – The beginning

It all started nine years ago with a small grant for the State of NH to offset the cost of B-20 biodiesel. Since then the City has used over 500,000 gallons of B-20.